Environmental Impact Assessment Report (EIAR)

Cunlaghfadda Green Energy Project, Co. Mayo

Chapter 10 – Air Quality

10. AIR QUALITY

10.1 Introduction

This chapter identifies, describes and assesses the likely significant direct and indirect effects on air quality arising from the construction, operation and decommissioning of the Proposed Project. The full description of the Proposed Project is detailed in Chapter 4 Description of the Proposed Project. Alternative designs initially proposed for the Proposed Project and their potential for effects on air quality are considered in Chapter 3 Consideration of Reasonable Alternatives.

For the purposes of this EIAR:

- Where the 'Proposed Wind Farm' is referred to, this refers to turbines and associated foundations and hardstanding areas, including access tracks, underground cabling, permanent meteorological mast, temporary construction compound, peat and spoil management, biodiversity enhancement, tree felling, site drainage, operational stage signage, turbine delivery route and junction accommodation works and all ancillary works and apparatus. The Proposed Wind Farm is described in detail in Chapter 4, Section 4.4.1 of this EIAR.
- Where the 'Proposed Grid Connection' is referred to, this refers to the proposed 110kV onsite substation, underground 110kV cabling and end masts connecting the proposed 110kV substation to the Cloon - Castlebar 110kV overhead line, access tracks and all ancillary works and apparatus. The Proposed Grid Connection Route is described in detail in Chapter 4, Section 4.4.2 of this EIAR.
- Where the 'Proposed Project' is referred to, this encompasses the entirety of the project (Proposed Wind Farm and Proposed Grid Connection) for the purposes of this EIA in accordance with the EIA Directive. The Proposed Project is described in detail in Chapter 4 of this EIAR.
- Where 'the Site' is referred to, this relates to the primary study area for the EIAR, as delineated by the EIAR Site Boundary in green as shown on Figure 1-2 of the EIAR and encompasses an area of approximately 165 hectares.

The assessment has been carried out according to best practice and guidelines relating to air quality.

10.1.1 Background

The Site is located within a rural setting in south Mayo, approximately 5.3km to the northwest of Claremorris town centre. Castlebar is located approximately 16km north-west of the Site. The Site measures approximately 165 hectares and comprises a mix of agri-pastoral land, bog and private forestry. The N60 National Road runs north-south approximately 2km to the east. The R331 Regional Road runs northeast-southwest, approximately 5km from the southern boundary of the site. Existing access is via the local L15053 road to the south and the local L5536 road to the north.

The Proposed Grid Connection will facilitate the connection of the Proposed Wind Farm to the national electricity grid. The existing Cloon - Castlebar 110kV Overhead Line will be broken with 2 no. new end masts (lattice-type towers) to facilitate the connection to the proposed onsite 110kV substation via the underground electricity cabling. The Proposed Grid Connection is located entirely within private land/tracks within the Site.

Current land-use within the Site is predominantly comprised of peat cutting activities, private forestry and agri-pastoral agriculture land. Land-use in the wider landscape of the site comprises a mix of agriculture, peat cutting, low density residential, and private forestry.

The townlands in which the Proposed Project is located are listed in Table 1-1 in Chapter 1 Introduction of this EIAR.

Due to the non-industrial nature of the Proposed Project, and the general character of the surrounding environment, baseline air quality sampling was deemed to be unnecessary for this EIAR. It is expected that the air quality in the existing environment is good, since there are no major sources of air pollution (e.g. heavy industry) in the vicinity of the Site.

The production of energy from wind turbines has no direct air emissions as is expected from fossil fuel-based power stations. Harnessing more energy by means of renewable sources will reduce dependency on fossil fuels, thereby resulting in a reduction in harmful emissions that can be damaging to human health and the environment. Some temporary or short-term indirect emissions associated with the construction of the Proposed Project will include vehicular and dust emissions.

10.1.2 Statement of Authority

This section of the EIAR has been prepared by Joye Atkinson and Natalia Stolarska and reviewed by Órla Murphy of MKO.

Joye is a Graduate Environmental Scientist with MKO with over one year of professional consultancy experience and holds a BSc (Hons) in Social Science from University College Dublin. Prior to joining MKO, she completed a one-year internship with RMLA Planning, where she contributed to a range of projects across both the public and private sectors. Joye's core strengths include drafting Environmental Impact Assessment Report (EIAR) chapters, as well as strong report writing skills, with the ability to present complex environmental data clearly, concisely, and in line with regulatory requirements. At MKO, Joye's work focuses on report writing, EIAR chapter preparation, and GIS-based mapping. She has contributed to multiple onshore wind projects across Ireland, supporting both technical analysis and environmental assessment.

Natalia Stolarska is a Project Environmental Scientist within the environment renewables team in MKO with over 2 years' of professional experience as an environmental consultant. Natalia holds a BSc in Earth and Ocean Science and an MSc in Environmental Leadership. Natalia's key strengths and areas of expertise are in managing wind farm EIAR projects, drafting and reviewing of EIAR chapters, wind farm feasibility studies and QGIS mapping. Since joining MKO Natalia has also been involved in coordinating environmental site work for a wide range of developments, assisting in stakeholder engagement, scoping exercises, organising, attending and leading pre-application meetings with local authorities and An Coimisiún Pleanála. Natalia also holds a membership with the Institute of Sustainability and Environmental Professionals (ISEP).

Órla Murphy is a Senior Environmental Scientist with McCarthy O'Sullivan Ltd. with 10 years of experience in private consultancy. Órla holds BSc (Hons) in Geography from Queens University Belfast & a MSc in Environmental Protection and Management from the University of Edinburgh. Prior to taking up her position with McCarthy Keville O'Sullivan in January 2018, Órla worked as an Environmental Project Assistant with ITPEnergised in Scotland. Órla's key strengths and areas of expertise are in Environmental Protection and Management, EIA, Project Management, Renewable Energy and Peatland Management, where she has carried out research projects and site work relating to restoration and management of peatland sites in both Scotland and Northern Ireland. On joining MKO Órla has been involved on a range of renewable energy infrastructure projects. In her role as a project manager, Órla works with and co-ordinates large multidisciplinary teams including members from MKO's Environmental, Planning, Ecological and Ornithological departments as well as sub-contractors from various fields in the preparation and production of EIARs. Within MKO, Órla plays a role in the management of and sharing of knowledge with junior members of staff and works as part of a large multi-disciplinary team to produce EIA Reports.

10.1.3 Relevant Guidance

The air quality section of this EIAR is carried out in accordance with the EIA Directive 2011/92/EU as amended by Directive 2014/52/EU and having regard, where relevant, to guidance listed below:

- Air Quality Assessment of Specified Infrastructure Projects – Overarching Technical Document PE-ENV-01106 (Transport Infrastructure Ireland, December 2022)
- Air Quality Assessment of Proposed National Roads – Standard PE-ENV-01107' (Transport Infrastructure Ireland, December 2022).
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports – June 2022 (EPA, 2022).
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (EC, 2017).
- Air Quality in Ireland Report 2024 (EPA, 2025).
- European Environment Agency (2025) Europe's Air Quality Status 2025.
- Best Practice Guidelines on the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects (EPA, 2021).
- Guidance of the Assessment of Dust from Demolition and Construction (IAQM, 2024).
- Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (TII, 2011).
- Guidelines for Assessment of Ecological Impacts of National Roads Schemes (TII, 2009).
- Clean Air Strategy for Ireland (Government of Ireland, 2023).
- UK Department of Environment Food and Rural Affairs (DEFRA) Part IV of the Environment Act 1995: Local Air Quality Management, LAQM.TG (16) (DEFRA 2018).
- UK Highways Agency (UKHA) Design Manual for Roads and Bridges (DMRB) – LA 105 Air Quality (UKHA, 2019).
- World Health Organization (WHO) Air Quality Guidelines for Particulate Matter, Ozone, Nitrogen Dioxide and Sulphur Dioxide Global Update 2021 (WHO 2021).

10.1.4 Relevant Legislation

In 1996, the Air Quality Framework Directive (on ambient air quality assessment and management) (96/62/EC) was published. This Directive was transposed into Irish law by the Environmental Protection Agency Act 1992 (Ambient Air Quality Assessment and Management) Regulations 1999 (S.I. No. 33 of 1999). The Directive was followed by four Daughter Directives, which set out limit values for specific pollutants:

- The first Daughter Directive (1999/30/EC) addresses sulphur dioxide, oxides of nitrogen, particulate matter and lead.
- The second Daughter Directive (2000/69/EC) addresses carbon monoxide and benzene. The first two Daughter Directives were transposed into Irish law by the Air Quality Standards Regulations 2002 (SI No. 271 of 2002).
- The first two Daughter Directives were transposed into Irish law by the Air Quality Standards Regulations 2002 (SI No. 271 of 2002).
- The third Daughter Directive, Council Directive (2002/3/EC) relating to ozone was published in 2002 and was transposed into Irish law by the Ozone in Ambient Air Regulations 2004 (SI No. 53 of 2004).
- The fourth Daughter Directive (2004/107/EC), published in 2004, relates to polyaromatic hydrocarbons (PAHs), arsenic, nickel, cadmium and mercury in ambient air and was transposed into Irish law by the Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations, 2009

(S.I. No. 58 of 2009) (amended by SI 659/2016 - Air Quality Standards (Amendment) and Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air (Amendment) Regulations 2016.)

The Air Quality Framework Directive and the first three Daughter Directives were replaced by the Clean Air for Europe (CAFE) Directive (Directive 2008/50/EC) on ambient air quality and cleaner air for Europe) (as amended by Directive EU 2015/1480) which encompasses the following elements:

- The merging of most of the existing legislation into a single Directive (except for the Fourth Daughter Directive) with no change to existing air quality objectives.
- New air quality objectives for PM2.5 (fine particles) including the limit value and exposure concentration reduction target.
- The possibility to discount natural sources of pollution when assessing compliance against limit values.
- The possibility for time extensions of three years (for particulate matter PM10) or up to five years (nitrogen dioxide, benzene) for complying with limit values, based on conditions and the assessment by the European Commission.

Table 10-1 below sets out the limit values of the CAFE Directive, as derived from the Air Quality Framework Daughter Directives. Limit values are presented in micrograms per cubic metre ($\mu g/m^3$) and parts per billion (ppb). The notation PM_{10} is used to describe particulate matter or particles of ten micrometres or less in aerodynamic diameter. $PM_{2.5}$ represents particles measuring less than 2.5 micrometres in aerodynamic diameter.

The CAFE Directive was transposed into Irish legislation by the Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) as amended by the Air Quality Standards (Amendments) and Arsenic, Cadmium, Mercury, Nickel and Polycyclic Aromatic Hydrocarbons in Ambient Air Regulations, 2016 (S.I. 659 2016). The 2011 Regulations superseded the Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002), the Ozone in Ambient Air Regulations 2004 (S.I. No. 53 of 2004) and the Ambient Air Quality Assessment and Management Regulations 1999 (S.I. No. 33 of 1999). The Air Quality Standards Regulations 2011 (S.I. No. 180 of 2011) was revoked on 31 December 2022 and has been replaced by the Ambient Air Quality Standards Regulations 2022 (S.I. No. 739/2022).

On the 26th of October 2022 the EU Commission announced a proposed review of Air Quality Standards.[1] The proposed revision will set interim 2030 EU air quality standards, seeking to align more closely with WHO recommendations, while putting the EU on a trajectory to achieve zero pollution for air at the latest by 2050, in synergy with climate-neutrality efforts. The first review is proposed to take place by the end of 2028, with the objective of ensuring full alignment with WHO recommendations.

The Ambient Air Quality Standards Regulation (2022) made the provisions necessary for the implementation of Directive 2008/50/EC of the European Parliament and of the Council on ambient air quality and cleaner air for Europe (as amended), establishes the limit values and alert thresholds for concentrations of certain pollutants in ambient air, provides for the assessment of concentrations of certain pollutants in ambient air, provides for the maintenance of ambient air quality, and ensures that adequate information on concentrations of pollutants are made available to the public.

On 10 December 2024, Directive (EU) 2024/2881 on ambient air quality and cleaner air for Europe came into force. This directive recasts Directive 2008/50/EC (the CAFE Directive) and the fourth Daughter Directive (Directive 2004/107/EC relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air) and incorporates them into a single directive. This recast directive sets out limit values, target values, average exposure reduction obligations, average exposure concentration objectives, critical levels, alert thresholds, information thresholds and long-term

[1] *European Commission, Revision of the Ambient Air Quality Directives.* <https://environment.ec.europa.eu/topics/air/air-quality/revision-ambient-air-quality-directives_en>

objectives. It sets out air quality provisions with the aim of achieving the objectives of the European Commission's Zero Pollution Action Plan, so that air pollution within the EU is progressively reduced to levels no longer considered harmful to health and natural ecosystems at the latest by 2050. At the time of writing Directive (EU) 2024/2881 has not yet been transposed into Irish law.

10.1.5 Air Quality Standards

The Ambient Air Quality Standards Regulations 2022 (S.I. No. 739/2022) remains aligned to the CAFÉ Directive and diverts to the CAFÉ Directive for the Limit values outlined in Table 10-1, the Assessment Thresholds in Table 10-2, the Ozone limits and Assessment Thresholds in Table 10-3 and Table 10-4 respectively.

Table 10-1 Limit values of the CAFE Directive 2008/50.EC, Source: https://airquality.ie/information/air-quality-standards)

Pollutant	Limit Value Objective	Averaging Period	Limit Value ($\mu g/m^3$)	Basis of Application of Limit Value	Attainment Date
Sulphur dioxide (SO_2)	Protection of Human Health	1 hour	350	Not to be exceeded more than 24 times in a calendar year	1st Jan 2005
Sulphur dioxide (SO_2)	Protection of human health	24 hours	125	Not to be exceeded more than 3 times in a calendar year	1st Jan 2005
Sulphur dioxide (SO_2)	Protection of vegetation	Calendar year	20	Annual mean	19th Jul 2001
Sulphur dioxide (SO_2)	Protection of vegetation	1st Oct to 31st Mar	20	Winter mean	19th Jul 2001
Nitrogen dioxide (NO_2)	Protection of human health	1 hour	200	Not to be exceeded more than 18 times in a calendar year	1st Jan 2010
Nitrogen dioxide (NO_2)	Protection of human health	Calendar year	40	Annual mean	1st Jan 2010
Nitrogen monoxide (NO) and	Protection of vegetation	Calendar year	30	Annual mean	19th Jul 2001-

nitrogen dioxide (NO_2)					
Particulate matter 10 (PM_{10})	Protection of human health	24 hours	50	Not to be exceeded more than 35 times in a calendar year	1st Jan 2005
Particulate matter 10 (PM_{10})	Protection of human health	Calendar year	40	Annual mean	1st Jan 2005
Particulate matter 2.5 ($PM_{2.5}$) Stage 1	Protection of human health	Calendar year	25	Annual mean	1st Jan 2015
Particulate matter 2.5 ($PM_{2.5}$) Stage 2	Protection of human health	Calendar year	20	Annual mean	1st Jan 2020
Lead	Protection of human health	Calendar year	0.5	Annual mean	1st Jan 2005
Carbon Monoxide	Protection of human health	8 hours	10,000	Not to be exceeded	1st Jan 2005
Benzene	Protection of human health	Calendar year	5	Annual mean	1st Jan 2010

Table 10-2 Assessment Thresholds from CAFE Directive 2008/50/EC

Pollutant	Limit Value Objective	Averaging Period	Limit Value ($\mu g/m^3$)	Basis of Application of Limit Value
Sulphur dioxide (SO_2)	Upper assessment threshold for the protection of Human Health	24 hours	75	Not to be exceeded more than 3 times in a calendar year
Sulphur dioxide (SO_2)	Lower assessment threshold for the protection of human health	24 hours	50	Not to be exceeded more than 3 times in a calendar year
Nitrogen dioxide (NO_2)	Upper assessment threshold for the	1 hour	140	Not to be exceeded more

Pollutant	Limit Value Objective	Averaging Period	Limit Value (µg/m^3)	Basis of Application of Limit Value
	protection of human health			than 18 times in a calendar year
Nitrogen dioxide (NO_2)	Lower assessment threshold for the protection of human health	1 hour	100	Not to be exceeded more than 18 times in a calendar year
Particulate matter 10 (PM_{10})	Upper assessment threshold	24 hours	35	Not to be exceeded more than 35 times in a calendar year
Particulate matter 10 (PM_{10})	Lower assessment threshold	24 hours	25	Not to be exceeded more than 35 times in a calendar year
Lead (Pb)	Upper assessment threshold	Calendar Year	0.35	-
Lead (Pb)	Lower assessment threshold	Calendar Year	0.25	-
Carbon Monoxide (CO)	Upper assessment threshold	8 hours	7000	-
Carbon Monoxide (CO)	Lower assessment threshold	8 hours	5000	-
Benzene (C_6H_6)	Upper assessment threshold	Calendar Year	3.5	-
Benzene (C_6H_6)	Lower assessment threshold	Calendar Year	2	-

Ozone is set out differently in the CAFE Directive in that it sets target values and long-term objectives for ozone rather than limit values. Table 10-3 presents the target values and long-term target value for ozone and Table 10-4 details the threshold values for Ozone.

Table 10-3 Target values for Ozone defined in Directive 2008/50/EC

Objective	Parameter	Target Value for 2010	Long- term Objective
Protection of human health	Maximum daily 8-hour mean	120 µg/m^3 not to be exceeded more than 25 days per calendar year averaged over 3 years	120 µg/m^3

Objective	Parameter	Target Value for 2010	Long- term Objective
Protection of vegetation	AOT40* calculated from 1-hour values from May to July	18,000 µg/m^3.h averaged over 5 years	6,000 µg/m^3.h

* AOT40 is a measure of the overall exposure of plants to ozone. It is the sum of the excess hourly concentrations greater than 80 µg/m3 and is expressed as µg/m3 hours.

Table 10-4 Threshold for Ozone Defined in Directive 2008/50/EC (source: https://airquality.ie/information/air-quality-standards and Directive 2008/50/EC)

Pollutant	Averaging Period	Threshold
Information Threshold	1-hour average	180 µg/m^3
Alert Threshold	1-hour average	240 µg/m^3

10.1.5.1 Air Quality and Health

In September 2025, the EPA published '*Air Quality in Ireland 2024*'[2] which reports that although Ireland met the current EU legal air quality limits in 2024, monitoring results were higher than the more stringent health-based WHO air quality guidelines for a number of pollutants including: particulate matter (PM), nitrogen dioxide (NO_2), sulphur dioxide (SO_2) and ozone (O_3). The main sources of these pollutants are the burning of solid fuel in towns and villages and traffic in Irish cities. People's health and the health of the environment is impacted by these pollutants. Ireland's ambition in the 'Clean Air Strategy for Ireland' (discussed below) is to move towards alignment with the WHO Air Quality guidelines, this will be challenging but will have a significant positive impact on health. Despite comparing favourably with many other European countries, Ireland's 2024 monitoring results, if similar trends continue, would exceed the soon approaching 2026 WHO targets.

The Office of Energy Efficiency and Renewable Energy in the United States published an article on August 21, 2024, entitled '*How Wind Can Help Us Breathe Easier*.'[3] This article details the carbon dioxide (CO_2) emissions from different energy sources over the entire lifespan of the technology. It was found that wind energy produces around 11 grams of CO_2 per kilowatt-hour (g CO_2/kWh) of electricity generated, compared with about 980g CO_2/kWh for coal and roughly 465g CO_2/kWh for natural gas. That makes coal's carbon footprint almost 90 times larger than that of wind energy, and the footprint of natural gas more than 40 times larger. During combustion of high-emitting energy sources, other air pollutants, i.e., nitrogen oxides (NOx) and sulphur dioxide (SO_2), are also released into the atmosphere. This results in the emission of pollutants that can cause adverse health effects, including asthma, bronchitis, lower and upper respiratory symptoms, and heart attacks. Air pollution is responsible for a large number of premature deaths relating to these illnesses.

The EEA published a briefing on '*Europe's Air Quality Status*' in April 2025[4]. This briefing presented the status of concentrations of pollution in ambient air in 2022 and 2023 for regulated pollutants in relation to both EU air quality standards and the 2021 WHO guideline levels. The assessment shows that, in spite of constant improvements, exceedances of air quality standards are common across the EU, with concentrations well above the latest WHO recommendations. These emissions, along with

[2] *Environmental Protection Agency: Air Quality in Ireland 2024. Available at: https://www.epa.ie/publications/monitoring--assessment/air/air-quality-in-ireland-2024.php 2023.php#:~:text=Summary%3A%20Air%20quality%20in%20Ireland,based%20WHO%20guidelines%20in%202023.*
[3] *Office of Energy Efficiency and Renewable Energy (2024) How Wind Can Help Us Breathe Easier < https://www.energy.gov/eere/wind/articles/how-wind-can-help-us-breathe-easier>*
[4] *Europe's air quality status 2025 briefing. https://www.eea.europa.eu/en/analysis/publications/air-quality-status-report-2025*

others including sulphur oxides (SO_x) are produced during fossil fuel-based electricity generation in various amounts, depending on the fuel and technology used, emissions from industry and power plants, vehicles emissions and transport fuels.

More recently a few key messages are outlined in the '*Air Quality Status Report 2025'* published on April 9th, 2025, on the European Environment Agency web site[5]. These are:

- EU air quality standards are still not fully met across Europe, despite ongoing overall improvements.
- Since 2011, all countries have reduced exposure of their urban population to fine $PM_{2.5}$ particles, the most harmful pollutant from a health perspective. Nevertheless, the vast majority (94%) of the EU urban population remains exposed to $PM_{2.5}$ concentrations above the World Health Organization guideline level, highlighting the need for additional measures to reduce the associated health risks.
- Many locations already have air quality concentrations below the new EU 2030 standards. But in order to meet these new standards everywhere, and based on current progress, additional measures to improve air quality, especially in cities, are likely to be needed.

A 2024 EPA report *'Ireland's State of the Environment Report'* [6] states that the pollutants of most concern are Fine Particulate matter ($PM_{2.5}$.), Nitrogen Dioxide (NO_2) and Ammonia (NH_3). The EPA 2024 report goes on to state that:

> *"The planned transition to more renewable energy sources, and away from combustion-sourced heating systems to electrification, is a shift that could see greenhouse gas emissions from industry significantly decrease.*
>
> *As a consequence of meeting these growing demands primarily with oil, natural gas, coal and peat, our energy system is highly dependent on fossil fuels. Ireland has made some progress in transforming the electricity system through the deployment of wind farms, with renewable energy currently providing more than 40% of electricity used. However, electricity represents only one-fifth of Ireland's energy use, and our transport and heating systems remain heavily reliant on fossil fuel systems, with lock-ins that need to be addressed.*
>
> *While Ireland's renewable energy share has increased from 10.7% in 2018 (reported in the last State of the Environment Report) to 13.1% in 2022, this is the lowest level in the EU (well below the EU average of 23.0%), and Ireland is not on track to meet the EU-wide binding target of 42.5% renewable energy share by 2030. Reaching the target of 80% renewable electricity by 2030, while ensuring a stable energy supply, will require new capacity, a more flexible grid and increased interconnectivity (EC, 2024)*
>
> *Established technologies, such as wind energy, solar photovoltaics and bioenergy, will be key in meeting short-term emission reduction targets (i.e. 2030), whereas significant growth in offshore wind infrastructure is expected to be the key essential element of future energy systems."*

[5] *European Environment Agency (EEA). (2025). Air Quality Status Report 2025.* <https://www.eea.europa.eu/en/analysis/publications/air-quality-status-report-2025>
[6] *Environmental Protection Agency (2024). Irelands State of the Environment Report 2024)* <https://www.epa.ie/our-services/monitoring--assessment/assessment/irelands-environment/state-of-environment-report-/

The EPA also published a report in May 2025 providing details of emissions of air pollutants in Ireland in the period 1990 to 2023 and projected emissions of these pollutants for 2030[7]. The Key findings of the report with respect to assessment of targets are:

- Ireland is compliant with current and future emission reduction commitments for ammonia (NH3), non-methane volatile organic compounds (NMVOC), sulphur dioxide (SO2), nitrogen oxides (NOx) and fine particulate matter (PM2.5)
- Ammonia emissions are projected to be in compliance out to 2030
- An adjustment to NMVOC emissions is required in order to meet the required emission reduction commitment made in 2023.

The Proposed Project therefore represents an opportunity to further harness Ireland's significant renewable energy resources, with valuable benefits to air quality and in turn to human health. The consumption of fossil fuels for energy results in the release of particulates, sulphur dioxide and nitrogen dioxide to the air. The use of wind energy, by providing an alternative to electricity derived from coal, oil or gas-fired power stations, results in emission savings of carbon dioxide (CO_2), oxides of nitrogen (NO_x), and sulphur dioxide (SO_2), thereby resulting in cleaner air and associated positive health effects.

Whilst there is the potential of such emissions to be generated from the construction, operational and decommissioning phases of the Proposed Project, mitigation measures will be implemented at this Site to reduce the impact from dust and vehicle emissions, which are discussed in Section 10.3 below.

Ireland's Clean Air Strategy 2023[8] sets out the detail of seven strategic frameworks that will be used to ensure that air quality continues to improve (Figure 10-1). The aims of these key strategic frameworks are:

- To set the appropriate targets and limits to ensure continuous improvements in air quality across the country and to deliver health benefits for all.
- To ensure the integration of clean air considerations into policy development across Government.
- To increase the evidence base that will help Ireland to continue to evolve it's understanding of the sources of pollution and their impacts on health, in order to address them more effectively.
- To enhance regulation required to deliver improvements across all pollutants.
- To improve the effectiveness of our enforcement systems.
- To promote and increase awareness of the importance of clean air, and the links between cleaner air and better health.
- To develop the additional targeted/specific policy measures as required to deal with national or local air quality issues.

Since the publication of the Clean Air Strategy 2023, the Clean Air Strategy for Ireland *First Progress Report* 2024 was released. This report detailed the significant progress that has been made on the actions in the strategy since its publication in April 2023. The key takeaways that have been implemented since the publication of the strategy include the operational use of the Air Pollution Act 1987 (Solid Fuels), please note, while it is too early to say the exact impact that these regulations have had on air quality, initial indications from the EPA are that there have been significant air quality improvements made in areas prone to burning solid fuels. The Clean Air Strategy saw a push for the submission of Ireland's second National Air Pollution Control Programme, which was completed in May 2024, and the development of new public awareness campaigns. The Clean Air Strategy has

[7] *Environmental Protection Agency (EPA). (2025). Ireland's Air Pollutant Emissions 1990–2030.* <https://www.epa.ie/publications/monitoring–assessment/climate-change/air-emissions/EPA-Air-Pollutant-Final-Report.pdf>
[8] *Rialtas na hÉireann Clean Air Strategy April 2023. Available at:* https://www.gov.ie/en/publication/927e0-clean-air-strategy/#:~:text=The%20Clean%20Air%20Strategy%20provides,delivering%20on%20wider%20national%20objectives.

furthermore increased the frequency and financial supports given to local authorities to conduct sulphur testing[9].

Figure 10-1 Seven Strategic Frameworks for Air Quality, with associated chapters in brackets. Reproduced as Figure 1 from Clean Air Strategy 2023.

Chapter 11 of the Clean Air Strategy discusses Air Quality Policy Development. The chapter discusses energy policy and acknowledges how the State's accelerated transition to renewable electricity will be critical to successfully meeting the ambitious renewable energy and greenhouse gas emission reduction targets outlined in the European Green Deal and Ireland's Climate Action Plan 2025, as well as to protecting against security of supply risks and removal of fossil fuels from power generation. Wind (offshore and onshore) and solar energy will be the leading cost-effective technologies to achieve our energy and emissions targets, as well as displacing emissions in other sectors, including household heating and vehicle transport. In the Clean Air Strategy, Climate Action Plan 2023 is referenced, while Climate Action Plan 2025 is currently the latest revision. The targets of the Climate Action Plan 2025 and the European Green Deal are to deliver net-zero greenhouse gas emissions by 2050 and reduce greenhouse gas emissions to at least 55% by 2030, compared to 1990 levels.

10.1.6 Methodology

The assessment of the development footprint of the Proposed Project, within this EIAR Chapter, is based on the maximum potential footprint for all of the infrastructural elements. This precautionary approach is taken as the assessment of the maximum development footprint will, in the absence of mitigation measures, give rise to the greatest potential for significant effects. Should the development footprint be less than the maximum, the potential for significant effects will also be reduced.

[9] *Clean Air Strategy For Ireland First Progress Report 2024 . Available at: https://assets.gov.ie/static/documents/clean-air-strategy-for-ireland-first-progress-report.pdf*

10.1.6.1 Air Quality Zones

The air quality zone for the Site was selected, followed by a review of EPA collated baseline air quality data namely Sulphur Dioxide (SO_2), Particulate Matter (PM_{10}), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO) and Ozone (O_3) for the selected air quality zone to determine the representative levels of such emissions for the Proposed Project.

The EPA has designated four Air Quality Zones for Ireland:

- Zone A: Dublin City and environs
- Zone B: Cork City and environs
- Zone C: 16 urban areas with population greater than 15,000
- Zone D: Remainder of the country.

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the CAFE Directive. The site of the Proposed Project lies within Zone D, which represents rural areas located away from large population centres.

10.1.6.2 Air Quality Data Review

The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones. The most recent report on air quality in Ireland, 'Air Quality in Ireland 2024' was published by the EPA in 2025. The EPA reports provide SO_2, PM_{10}, NO_2 and O_3 concentrations for areas in Zone D. These are detailed in the Baseline Air Quality section below.

10.1.6.3 Dust

The Institute of Air Quality Management in the UK (IAQM) guidance document '*Guidance on the Assessment of Dust from Demolition and Construction*' [10](2024) (hereafter referred to as 'IAQM 2024 Guidance') was considered in the dust impact assessment. The guidance document outlines an assessment method for predicting the impact of dust emissions from construction activities based on the scale and nature of the works and the sensitivity of the area to dust impacts. This methodology has been used to predict the likely risk of dust as a result of the construction phase works operational phase activities and decommissioning phase. The use of UK guidance is considered best practice in the absence of applicable Irish guidance and has been recommended by Transport Infrastructure Ireland (TII) in the TII guidance document *Air Quality Assessment of Specified Infrastructure Projects – PE-ENV-01106* (TII, 2022a). The major dust generating activities are divided into four types within the IAQM 2024 Guidance to reflect their different potential impacts. These are:

- Demolition (There are no demolition works required for any phase of the Proposed Project);
- Earthworks;
- Construction; and
- Trackout.[11]

The magnitude of dust generating activities is divided into 'Large', 'Medium' or 'Small' scale depending on the nature of the activities involved. IAQM (2024) guidance provides example definitions for the scale of the activities, and these are applied for this development as outlined in Table 10-5.

[10] *IAQM (2024) Guidance on the Assessment of Dust from Demolition and Construction. Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf*

[11] *The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when Heavy Goods Vehicles (HGVs) and/or Heavy Duty Vehicles (HDVs) leave the construction / demolition site with dusty materials, which may then spill onto the road, and/or when HGVs/HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.*

Table 10-5 Description of magnitude for nature of activities

	Large	Medium	Small
Demolition	Total building volume >75,000 m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12m above ground level	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months
Earthworks	Large: Total site area >110,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height	Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height	Total site area <18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height
Construction	Total building volume >75,000 m^3, on site concrete batching, sandblasting	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber)
Trackout	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m	20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m
	Note: A vehicle movement is a one way journey. i.e. from A to B and excludes the return journey. HDV movements during a construction project vary over its lifetime, and the number of movements is the maximum not the average		

The earthwork requirements as outlined in Appendix 4-3, Peat and Spoil Management Plan, of this EIAR results in the classification of the Proposed Project as 'Large' for Earthworks and Construction activities. The number of HGV movements per day, as outlined in Section 15.1.4.2 in Chapter 15 Material Assets of this EIAR, results in the classification of the Proposed Project as 'Large' for Trackout activities. Please see Table 15-15 of Chapter 15 for a summary of trip generation and construction days.

The magnitude of each activity is combined with the overall sensitivity of the area to determine the risk of dust impacts from site activities.

10.1.6.3.1 *Defining the Sensitivity of the Area*

For the purposes of this assessment, high sensitivity receptors are residential properties and dust sensitive ecological habitats. Commercial properties and places of work are regarded as medium sensitivity while low sensitivity receptors are places where people are present for short periods or do not expect a high level of amenity[12].

[12] *Please see Section 7.3 (pg. 18) of the 2024 IAQM Guidance on the assessment of dust from demolition and construction (https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf) for full definitions of high, medium, and sensitive receptors for each of the three types of effects being considered*

There are no medium sensitivity receptors or low sensitivity receptors in this project, with high sensitivity receptors being considered.

The IAQM 2024 Guidance has outlined three types of effects to be considered:

- Sensitivities of People to Dust Soiling Effects
- Sensitivities of People to the Health Effects of PM_{10}
- Sensitivities of Receptors to Ecological Effects

Sensitivities of People to Dust Soiling Effects

Dust soiling effects can occur for a distance of 250m from works areas, but the majority of deposition occurs within the first 50m (IAQM, 2024). Table 10-6 below identifies the sensitivity of an area to dust soiling effects on people and their properties, relative to different receptor sensitivities.

Table 10-6 Sensitivity of the Area to Dust Soiling Effects on People and Property. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Number Of Receptors	Distance from source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Sensitivities of People to the Health Effects of PM_{10}

When assessing sensitivity of people to the health effects of PM_{10}, the IAQM 2024 Guidance recommends the use of sensitivities bands based on whether or not the receptor is likely to be exposed to elevated concentrations of PM_{10} over a 24-hour period. Table 10-7 below identifies the sensitivity of an area to human health effects of PM_{10}, relative to different receptor sensitivities. As indicated in Section 10.1.6.1 above, the Proposed Project is situated in Zone D. According to the 2024 EPA baseline air quality data[13]; the average PM_{10} for Zone D is 11.5µg/m^3. Therefore, the only annual PM_{10} concentration categorised in the IAQM 2024 Guidance relevant to the Proposed Project is the minimum concentration of <24µg/m^3.

Table 10-7 Sensitivity of the Area to Human Health Impacts. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Annual Mean PM_{10} concentration	Number Of Receptors	Distance from source (m)			
			<20	<50	<100	<250
High	>32 µg/m^3	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low

[13] *https://www.epa.ie/publications/monitoring--assessment/air/air-quality-in-ireland-2024.php*

Receptor Sensitivity	Annual Mean PM_{10} concentration	Number Of Receptors	Distance from source (m)			
			<20	<50	<100	<250
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Sensitivities of Receptors to Ecological Effects

Dust deposition due to demolition, earthworks, construction and trackout has the potential to physically and chemically affect sensitive habitats and plant communities. Table 10-8 below identifies the sensitivity of an area to ecological impacts.

Table 10-8 Sensitivity of the Area to Ecological Impacts. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Distance from source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

There are 6 no. ecological receptor and habitats within the Site which as described by the IAQM 2024 Guidance which may be sensitive to dust. This ecologically sensitive habitat and its sensitivity designation is listed below:

- Annex I *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) – high sensitivity.
- Marsh fritillary suitable habitat – high sensitivity.
- Cutover bog habitats – high sensitivity.
- Remnant raised bog habitat – high sensitivity
- Cutover bog with small remnants of uncut raised bog- high sensitivity
- Annex I Transition mires and quaking bogs- high sensitivity.

For the purposes of the assessment, all six habitats are given a 'High' sensitivity.

The above identified sensitive ecological receptors have been assessed within Chapter 6 Biodiversity, Chapter 9 Water, and the Natura Impact Statement (NIS). The ecological receptors sensitivity to dust are assessed below in Section 10.3.2.3.

10.1.6.3.2 Defining the Risk of Impacts

The dust emission magnitude is combined with the sensitivity of the area to determine the risk of impacts with no mitigation applied. The matrix in Table 10-9 provides a method of assigning the level of risk for each activity.

Table 10-9 Risk of Dust Impacts for Earthworks, Construction, Trackout (IAQM, 2024)

Sensitivity of Area	Dust Emission Magnitude		
	Large	**Medium**	**Small**
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

EPA classification terminology as presented in Table 1-2 of Chapter 1 of this EIAR have been correlated with the equivalent risk rating from Table 10-10 below.

Table 10-10 Correlation of Effect Classification Terminology (EPA, 2022) to Risk Rating

EPA Term	EPA Description	Risk Rating
Imperceptible	An effect capable of measurement but without significant consequences	Negligible
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities	Low
Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends	Medium
Significant	An effect, which by its character, magnitude, duration or intensity alters a sensitive aspect of the environment	High

The risk of dust impacts for the Earthworks, Construction and Trackout activities from the Proposed Project is set out in Section 10.3 below.

10.2 Baseline Air Quality

The air quality in the vicinity of the Site is typical of that of rural areas in the west of Ireland, i.e., Zone D. Prevailing south-westerly winds carry clean, unpolluted air from the Atlantic Ocean onto the Irish mainland. The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones. The most recent report on air quality in Ireland, '*Air Quality in Ireland 2024'* was published by the EPA in 2025. The EPA reports provide SO_2, PM_{10}, NO_2 and O_3 concentrations for areas in Zone D. There is no data for Zone D for CO concentrations due to operational issues. As such, data from the 2024 EPA Report 'Air Quality in Ireland 2023' has been used to provide a CO baseline. These are detailed in the following tables.

10.2.1.1 Sulphur Dioxide (SO_2)

The Sulphur dioxide data from Cork Harbour, Kilkitt, Askeaton and Edenderry in 2024 is presented in Table 10-11.

Table 10-11 Sulphur Dioxide (SO_2) Data for Zone D Sites in 2023

Parameter	Measurement (ug/m³)
Annual Mean	2.8
Hourly values > 350	0
Hourly max (Average)	36.2
Daily values > 125	0
Daily max (Average)	14.7

During the monitoring period there were no exceedances of the daily limit values for the protection of human health. As can be observed from Table 10-11 the average maximum hourly value recorded during the assessment period was 36.2 µg/m^3. In addition, there were no exceedances of the annual mean limit for the protection of ecosystems. It is expected, based on professional judgement, that SO_2 values at the Site are similar or lower than those recorded for the Zone D sites above.

10.2.1.2 Particulate Matter (PM_{10})

Sources of particulate matter include vehicle exhaust emissions, dust from soil and road surfaces, construction works and industrial emissions. The EPA report[14] provides annual mean PM_{10} concentration for nineteen Zone D towns, Askeaton, Birr, Carnsore, Carrick-on-Shannon, Castlebar, Cavan, Claremorris, Cobh Carrignafoy, Cork Mallow, Edenderry, Enniscorthy, Galway Ballinasloe, Killarney, Kilkitt, Longford, Macroom, Malin Head, Roscommon Town and Tipperary Town. Average particulate matter (PM_{10}) data for these Zone D towns 2024 is presented in Table 10-12. Given the proximity of the Site to Claremorris (approximately 5.3km northwest to Claremorris) PM_{10} data for Claremorris have been considered which is presented in Table 10-13 below.

Table 10-12 Particulate Matter (PM_{10}) Data for Zone D Sites in 2024

Parameter	Measurement
Annual Mean	11.5 µg/m^3
% Data Capture (Average)	94%

[14] *EPA (2025). Air Quality in Ireland 2024.*

Parameter	Measurement
Values > 50 ug/m^3	Max 7 (Longford)
Daily Max (Average)	49.5 µg/m^3

Table 10-13 Particulate Matter (PM_{10}) Data for Claremorris in 2024

Parameter	Measurement
Annual Mean	8.3 µg/m^3
% Data Capture (Average)	95.9%
Values > 50 ug/m^3	0
Daily Max (Average)	28.7 µg/m^3

The daily limit of 50 µg/m^3 for the protection of human health was exceeded on a total of 16 days across all monitoring locations, which is lesser than the PM_{10} daily limit for the protection of human health of a max 35 days >50 µg/m^3 applicable from 2005. The greatest number of exceedances occurred at Longford where the PM_{10} daily limit was exceeded on 7 no. occasions. In the EPA 2025 report, it notes that there were breaches in the levels of particulate matter (PM), which in Ireland, mainly comes from the burning of solid fuel, such as coal, peat, and wood to heat our homes. It is expected based on professional judgement that PM_{10} values at the Proposed Project is similar or lower than those recorded for the Zone D sites above.

10.2.1.3 Nitrogen Dioxide (NO_2)

Nitrogen dioxide data for Birr, Castlebar, Carrick-on-Shannon, Cork Mallow, Edenderry, Emo Court and Kilkitt in 2024 is presented in Table 10-14.

Table 10-14 Nitrogen Dioxide Data for Zone D Sites in 2024

Parameter	Measurement
Annual Mean (Average)	8.3 µg/m^3
NO_2 Values >200	0
Values > 140 (UAT)	0
Values >100 (LAT)	1
Hourly Max. (Average)	68.6 µg/m^3

The annual NO_2 value was below the annual mean limit value for the protection of human health of 40 µg/m^3. The lower assessment threshold of 100 µg/m^3 was exceeded 1 no. times during the monitoring period in Edenderry and the upper assessment threshold of 140 µg/m^3 was not exceeded once during the monitoring period. Edenderry did not exceed the 18 hours limit during the monitoring period. The average hourly max. The NO_2 value of 68.6 µg/m^3 measured during the monitoring period was below the hourly max threshold of 200 µg/m^3. It is expected based on professional judgement that NO_2 values at the Site is similar or lower than those recorded for the Zone D sites above.

10.2.1.4 Carbon Monoxide (CO)

The Air Quality in Ireland 2023 report provides rolling 8-hour carbon monoxide concentrations for Birr, a Zone D site. Carbon Monoxide data for 2023 is presented in Table 10-15.

Table 10-15 Carbon Monoxide Data for Birr - Zone D Site in 2023

Parameter	Measurement
Annual Mean	0.6 mg/m^3
Median	0.6 mg/m^3
% Data Capture	99.8%
Values > 10	0
Max	2.2 mg/m^3

The average concentration of carbon monoxide was 0.6 mg/m^3. The carbon monoxide limit value for the protection of human health is 10,000 $\mu g/m^3$ (or 10 mg/m^3). On no occasions were values in excess of the 10 mg/m^3 limit value set out in Directive 2008/50/EC. It is expected, based on professional judgement, that the CO value at the Site is similar or lower than those recorded for the Zone D site above.

10.2.1.5 Ozone (O_3)

The '*Air Quality in Ireland 2024'* report provides rolling 8-hour ozone concentrations for eight Zone D sites, Emo Court, Kilkitt, Carnsore Point, Mace Head, Castlebar, Valentia, Cork Mallow and Malin Head. Ozone (O_3) data for 2024 is presented in Table 10-16.

Table 10-16 Ozone Data for Zone D Sites in 2024

Parameter	Measurement
Annual Mean	58.9 $\mu g/m^3$
Median	59.9 µg/m3
% Data Capture	84.1%
No. of days > 120 $\mu g/m^3$	0 days

As can be observed from Table 10-16 there were no exceedances of the maximum daily eight-hour mean limit of 120 $\mu g/m^3$ The CAFE Directive stipulates that this limit should not be exceeded on more than 25 days per calendar year averaged over 3 years. It would be expected on professional judgement that O_3 values at the Site would be similar or lower than those recorded for the Zone D sites above.

10.2.1.6 Dust

There are no statutory limits for dust deposition in Ireland. However, EPA guidance suggests that a deposition of 10 mg/m^2/hour can generally be considered as posing a soiling nuisance. This equates to 240 mg/m^2/day. The EPA recommends a maximum daily deposition level of 350 mg/m^2/day when measured according to the German TA Luft Standard 2002. This limit value can also be implemented with regard to dust impacts from construction activities associated with the Proposed Project.

The extent of dust generation at any site depends on the type of activity undertaken, the location, the nature of the dust, i.e., soil, sand, etc., and the weather. In addition, dust dispersion is influenced by external factors such as wind speed and direction and/or periods of dry weather. Construction dust has the potential to be generated from on-site activities such as excavation and backfilling. Construction traffic movements also have the potential to generate dust as they travel along the haul route.

The potential dust-related effects on local air quality and the relevant associated mitigation measures are presented in Sections 10.3 below.

10.3 Likely and Significant Effect and Associated Mitigation Measures

10.3.1 'Do-Nothing' Effect

If the Proposed Project were not to proceed, the Site will continue to function as it does at present, with no changes to the current land-use and air quality. The effect of this is considered neutral in the context of the EIAR. If the Proposed Project were not to proceed, the opportunity to reduce emissions of carbon dioxide, oxides of nitrogen (NO_x), and sulphur dioxide (SO_2) to the atmosphere would be lost due to the continued dependence on electricity derived from coal, oil and gas-fired power stations, rather than renewable energy sources, such as the Proposed Wind Farm. This will result in an indirect negative effect on air quality nationally, regionally and locally.

Furthermore, the opportunity to capture an even greater part of County Mayo's valuable renewable energy resource would be lost, as would the opportunity to further contribute to meeting Government and EU targets for the production and consumption of electricity from renewable resources and the reduction of greenhouse gas emissions.

Furthermore, as this application includes a Biodiversity Management and Enhancement Plan (Appendix 6-4) to be implemented during the development's operation, the opportunity to enhance the site for biodiversity, at a local scale, would also be lost.

10.3.2 Construction Phase

Within this section, the effect will consider the Proposed Project i.e. both the Proposed Wind Farm and the Proposed Grid Connection, as a whole. Where the Proposed Wind Farm and the Proposed Grid Connection are required to be considered separately, this is identified within the assessment.

10.3.2.1 Exhaust Emissions: Construction of Proposed Project Infrastructure

Pre-Mitigation Impact

Exhaust emissions associated with vehicles and plant such as NO_2, Benzene and PM_{10} will arise as a result of construction activities for the Proposed Project.

The construction of turbines and associated foundations and hardstanding areas, meteorological mast, access tracks, temporary construction compounds, temporary works areas, underground cabling, site drainage, tree felling, peat and spoil management, turbine delivery route and junction accommodation works and all ancillary works and apparatus, will require the operation of construction vehicles and plant. It is also proposed to construct an underground cabling connection between the proposed 110kV substation and the existing Cloon-Castlebar 110kV overhead line. This will require the use of construction machinery, thereby giving rise to exhaust emissions.

This potential effect will not be significant and will be restricted to the duration of the construction phase and localised to works areas. Therefore, this constitutes a short-term, slight, negative and not significant effect in terms of air quality. Mitigation measures in relation to exhaust emissions due to the construction of the Proposed Project infrastructure are presented below.

Mitigation and Monitoring Measures

- Proposed Project construction staff will be trained how to inspect and maintain construction vehicles and plant to ensure good operational order while onsite, thereby minimising any emissions that arise. The Site Supervisor/Construction Manager produce and follow a site inspection and machinery checklist which will be followed and updated if/when required.
- All plant and materials shall be stored in dedicated areas (onsite). Machinery will be switched off when not in use.
- Turbines and construction materials will be transported to the site on specified routes only, unless otherwise agreed with the Planning Authority. Please see Chapter 15 Material Assets for details.
- Areas of excavation will be kept to a minimum, and stockpiling of excavated material will be minimised by coordinating excavation, placement of material in peat and spoil management areas to reduce the amount of vehicles where possible.
- The expected waste volumes generated onsite are unlikely to be large enough to warrant source segregation at the Site. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor local to the Site to reduce the emissions associated with vehicle movements.
- Regular maintenance of plant and equipment will be undertaken. Periodic technical inspection of vehicles will be carried to ensure they perform most efficiently;
- Implementation of a Traffic Management Plan (Chapter 15, Appendix 15-2) to minimise vehicle congestion;
- No idling of engines will be permitted, all site vehicles and machinery will be switched off when not in use
- The majority of aggregate materials for the construction of the Proposed Projectcumulativ will be obtained from the on-site borrow pit. This will reduce the number of delivery vehicles to site, thereby reducing emissions associated with vehicle movements.
- Any additional aggregate materials required for the construction of the Proposed Project will be sourced from local quarries.
- A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-5).

Residual Effect

With the implementation of the above measures for the construction phase, residual effects on air quality from exhaust emissions associated with construction activities and machinery are considered to be a short-term, imperceptible, negative effect.

Significance of Effects

The effects on air quality from exhaust emissions arising from the construction of the Proposed Project infrastructure are considered to be Not Significant.

10.3.2.2 Exhaust Emissions: Transportation to and from the Site

Pre-Mitigation Impact

The transport of turbine components, supporting infrastructure materials, construction and staff vehicles, small volume of aggregate material, and waste removal vehicles to/from the Site, the departure of empty vehicles and/or minor waste volumes (please see accompanying CEMP Appendix 4-5) from the site and daily staff movements, will give rise to exhaust emissions associated with the transport vehicles during the construction phase of 12-18 months. Please see Section 15.1 of Chapter 15 for further detail on traffic movements onsite during the construction phase. This constitutes a short-term, slight, negative effect in terms of air quality, which is Not Significant.

Mitigation measures in relation to exhaust emissions are presented below.

Mitigation and Monitoring Measures

- Measures listed in Section 10.3.2.1 above pertaining to exhaust emissions will be implemented for the transportation of vehicles to and from the Site.
- Aggregate materials for the construction of Site access tracks will be sourced initially on site from the borrow pit and all additional aggregate will all be locally sourced which will further reduce potential emissions.
- Turbines and construction materials will be transported to the Site on specified haul routes only.
- The expected waste volumes generated onsite are unlikely to be large enough to warrant source segregation at the Site. This waste material will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor local to the Site to reduce the emissions associated with vehicle movements.
- A Traffic Management Plan (Chapter 15, Appendix 15-2) will be implemented to optimise vehicle movements to and from the Site;
- A CEMP will be in place throughout the construction phase (see Appendix 4-5).

Residual Effect

Following implementation of the above mitigation measures, residual effects from exhaust emissions arising from transportation activities will have a short-term, imperceptible, negative effect on air quality.

Significance of Effects

The effects on air quality from exhaust emissions arising from transportation activities during the construction phase of the Proposed Project are considered to be Not Significant.

10.3.2.3 Dust Emissions: Construction of Proposed Project Infrastructure

Pre-Mitigation Effect

The construction of turbines and associated foundations and hard-standing areas, meteorological mast, access tracks, temporary construction compound, underground cabling, site drainage, tree felling, 110kV substation, turbine delivery route and junction accommodation works and all ancillary works and apparatus will give rise to dust emissions. In order to accommodate the delivery of turbine components, accommodation works will be required at the proposed new temporary site entrance off

the L1505 local road and at the proposed new permanent site entrance off the L15053 local road which have been assessed below.

Minor temporary accommodation works are required along the public road corridor at the turbine delivery route at the L1519 and the junction along the L1505/ L1506/ L5531. The locations of these accommodation areas are shown in Appendix 15-2. The high sensitivity receptors relating to residential properties in close proximity to the turbine accommodation works were identified using a constraints mapping process and detailed and updated planning searches, which informed the project sensitive receptor dataset. These include:

- There are 2 no. high sensitivity residential properties within 20m of the temporary turbine delivery accommodation works;
- There are 4 no. high sensitivity residential properties within 50m of the temporary turbine delivery accommodation works;
- There are 5 no. high sensitivity residential properties within 100m of the temporary turbine delivery accommodation works;
- There are 67 no. high sensitivity residential properties within 250m of the temporary turbine delivery accommodation works.

Works associated with the turbine delivery accommodation works will give rise to localised dust emissions which are considered to have no significant effects on air quality based on the limited and temporary nature of the works being within the public road corridor. Construction materials for the Proposed Project will be won onsite from the borrow pit, where an estimated 16,000m^3 of materials will be extracted. Additional construction materials for the Proposed Wind Farm will be locally sourced from the nearby quarries, and delivered to the Site on specified routes only, please refer to Section 4.6 of Chapter 4 of this EIAR and Section 15.1 of Chapter 15. For the purposes of assessment within the EIAR, 6 no. existing, authorised quarries, located within 20km of the Site have been selected.

The removal of the topsoil followed by its transportation and deposition at the peat and spoil management areas during the construction phase will give rise to dust emissions.

The IAQM (2024) methodology for *the Assessment of Dust from Demolition and Construction* as discussed in Section 10.1.6.3 above is used to assess the potential risk to sensitive receptors from dust deposition. Dust deposition impacts can occur for a distance of 250m from works areas, but the majority of deposition occurs within the first 50m (IAQM, 2024).

The high sensitivity receptors relating to residential properties were identified using a constraints mapping process and detailed and updated planning searches, which informed the project sensitive receptor dataset. These are shown on Figure 10-2 below.

- There is 1 no. high sensitivity residential property within 20m of the Proposed Project permanent footprint;
- There are 2 no. high sensitivity residential properties within 50m of the Proposed Project permanent footprint;
- There are 3 no. high sensitivity residential properties within 100m of the Proposed Project permanent footprint;
- There are 7 no. high sensitivity residential properties within 250m of the Proposed Project permanent footprint.

Sensitivities of People to Dust Soiling Effects

Table 10-17 below identifies the number of high sensitivity receptors in the area surrounding the development footprint of the Proposed Project to dust soiling effects, as described in Section 10.1.6.3.1 above. Taking the below into account, the sensitivity of the area based on the number of high sensitivity receptors and the distance from the Proposed Project is considered to be Medium to Low. For the

construction phase of the Proposed Project, the potential effect from dust emissions on people and property is considered to be a short term, slight, negative effect, and is Not Significant.

Table 10-17 Sensitivity of the Area to Dust Soiling Effects on People and property from site construction works. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

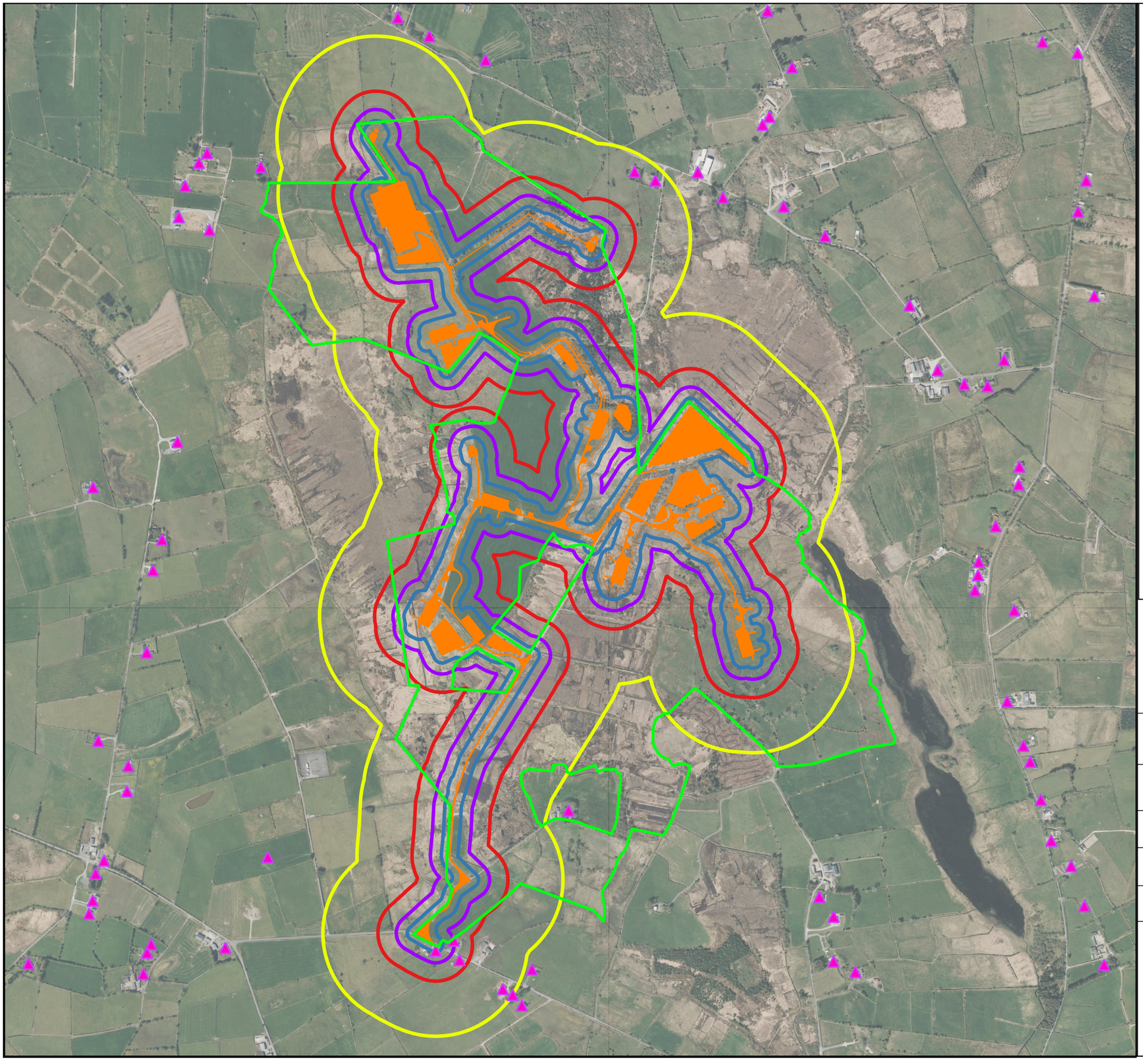
Receptor Sensitivity	Number Of Receptors	Distance from source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Sensitivities of People to the Health Effects of PM10

Table 10-18 below identifies the high sensitivity receptors in the area surrounding the development footprint of the Proposed Project to the health effects of PM_{10}, as described in Section 10.1.6.3.1 above. Taking the below into account, the sensitivity of the area based on the number of high sensitivity receptors and the distance from the Proposed Project is considered to be Low. As indicated in Section 10.1.6.1 above, the Proposed Project is situated in Zone D. According to the 2024 EPA baseline air quality data, the average annual PM_{10} for Zone D is 11.5 µg/m3. Therefore, the only annual PM_{10} concentration categorised in the IAQM 2024 Guidance relevant to the Proposed Project is the minimum concentration of <24µg/m^3. For the construction phase of the Proposed Project, the potential effect from dust emissions on human health is considered to be a short term, slight, negative effect, and is Not Significant.

Table 10-18 Sensitivity of the Area to Human Health Impacts from site construction works. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number Of Receptors	Distance from source (m)			
			<20	<50	<100	<250
High	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	<24 µg/m^3	>10	Low	Low	Low	Low
		1-10				
Low	-	≥1	Low	Low	Low	Low



Map Legend

- EIAR Site Boundary
- High Sensitivity Receptors
- Proposed Project Infrastructure
- 20m IAQM Dust Deposition Band
- 50m IAQM Dust Deposition Band
- 100m IAQM Dust Deposition Band
- 250m IAQM Dust Deposition Band

Drawing Title
IAQM Dust Deposition Bands and Relevant High Sensitivity Receptors for the Proposed Project

Project Title
Proposed Cunlaghfadda Green Energy Project

Drawn By	Checked By
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Project No. 220825	Drawing No. Figure 10-2
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Sensitivities of Receptors to Ecological Effects

The high sensitivity receptors relating to dust sensitive ecological habitats were also identified using a constraints mapping process and these include:

- There are 5 no. high dust sensitive ecological habitats within 20m of the Proposed Project footprint;
- There are 6 no. high dust sensitive ecological habitat within 50m of the Proposed Project footprint.

Table 10-19 below identifies the sensitivity of the receptors to ecological effects in the area surrounding the development footprint of the Proposed Project. As noted above, there are 5 no. sensitive ecological receptors (habitats) within 20m of the Proposed Project footprint, these being:

- Annex I *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) – high sensitivity.
- Marsh fritillary suitable habitat – high sensitivity.
- Cutover bog habitats – high sensitivity.
- Remnant raised bog habitat – high sensitivity
- Cutover bog with small remnants of uncut raised bog- high sensitivity

There are 6 no. sensitive ecological receptors (habitats) within 50m of the Proposed Project footprint, these being:

- Annex I *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) – high sensitivity.
- Marsh fritillary suitable habitat – high sensitivity.
- Cutover bog habitats – high sensitivity.
- Remnant raised bog habitat – high sensitivity
- Cutover bog with small remnants of uncut raised bog- high sensitivity
- Annex I Transition mires and quaking bogs- high sensitivity.

The overall sensitivity of these areas surrounding the development footprint of the Proposed Project is 'High'. Taking the below into account, the sensitivity of these areas based on the number of high sensitivity receptors and the distance from the Proposed Project, the overall receptor sensitivity is considered to be High. For the construction phase of the Proposed Project, the potential effect from dust emissions on sensitive ecological receptors is considered to be a short term, significant, negative effect, and is Significant. Please note, a detailed ecological impact assessment assessing impacts on these ecological receptors during the construction phase (including effects from dust) is contained in Chapter 6 of this EIAR and the NIS.

Table 10-19 Sensitivity of the Proposed Project to Ecological Impacts. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Distance from source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

As identified in Section 10.1.6.3 above, the Proposed Project is classified as 'Large' for Earthworks, and Construction activities. Therefore, when combined with the sensitivity of the area, using Table 10-19 above, the pre-mitigation risk of effects from the Proposed Project is summarised in Table 10-20 below.

Table 10-20 Summary Dust Risk Table for Proposed Project Activities

Potential Impact	Risk		
	Demolition	**Earthworks**	**Construction**
Dust Soiling	N/A	Medium Risk	Medium Risk
Human Health	N/A	Low Risk	Low Risk
Ecological	N/A	High Risk	High Risk

The overall risk of dust emissions impacts associated with dust soiling and human health with no mitigation applied for the major dust generating activities during the construction phase of the Proposed Project is 'Medium'. Therefore, the potential effects of dust from the construction phase of the Proposed Project are considered to be equivalent to short-term, moderate, negative effects which are Not Significant.

In relation to ecological receptors, the overall risk of dust emissions impacts with no mitigation applied for the major dust generating activities during the construction phase of the Proposed Project is 'High'. Therefore, the potential effects of dust from the construction phase of the Proposed Project are considered to be equivalent to short-term, significant, negative effects and are Significant.

Mitigation & Monitoring Measures

- Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored by the Ecological Clerk of Works (ECoW) to avoid, insofar as reasonably possible, increased runoff.
- Vehicle speeds will be controlled when passing over access tracks and hardstanding areas within the Site particularly during extended dry periods.
- If necessary, excavated material will be dampened prior to transport to the spoil management areas.
- Local roads on approach and within the Site will be regularly inspected for cleanliness and cleaned as necessary.
- The transportation of materials from the borrow pit around the Site will be covered by tarpaulin during extended dry periods where necessary.
- Construction materials will be sourced from local quarries and will be covered by tarpaulin during extended dry periods where necessary.
- The ECoW will regularly monitor adjacent marsh fritillary larval web areas on a daily basis for potential signs of dust deposition or any other habitat degradation. Dust level thresholds and weather will also be monitored in line with the mitigations set out in Section 6.5.2.1 in Chapter 6. The ECoW will have power to halt construction works if required.
- If any signs of habitat degradation are noted, the dust-producing works will be immediately halted and further mitigation to protect sensitive habitats from dust will be implemented in advance of resuming work.
- Groundworks (i.e., works with potential to create dust) associated with proposed access track to the north of, and within 20m of, the species-rich bog will be fully supervised by an ECoW.

- Furthermore, Groundworks (i.e., works with potential to create dust) associated with proposed Turbines 3, 4 and 6, as well as upgrades to the existing tracks to the west of Turbine 3 will be fully supervised by an ECoW to protect marsh fritillary suitable habitats.
- The ECoW will perform daily visual site inspections of dust occurrence on the Site during construction, particularly during periods of dry weather and windy conditions. This will be noted as part of site environmental audits. The appointed construction manager for the contractor will be notified if dusty conditions are prevalent on site.
- The ECoW will have power to halt construction works if required as outlined above.
- The construction contractor will be required to monitor monthly dust deposition levels each month for the duration of construction phase for comparison with the guideline of 350mg/m2/day(for non-hazardous dusts). This monitoring will be carried out at a series of suitable locations within the Site. Where dust levels are measured to be above this, mitigation measures will be reviewed as part of a dust minimisation plan.
- A Construction and Environmental Management Plan (CEMP) will be in place throughout the construction phase (see Appendix 4-5). The CEMP includes dust suppression measures.

Residual Effect

With the implementation of the above, the Proposed Project is considered to have a short-term, slight, negative effect on high sensitivity residential and ecological receptors brought about by dust emissions generated during the construction activities.

Significance of Effects

Based on the evaluation above there will be no significant direct or indirect effects on air quality due to dust emissions arising from the construction of the Proposed Project.

10.3.2.4 Dust Emissions: Transport to and from the Site

Pre-Mitigation Impact

Proposed Project

The transport of turbine components, infrastructure materials, construction and staff vehicles, small volumes of aggregate material and waste removal vehicles to/from the Site, the departure of empty vehicles and/or minor waste volumes (please see accompanying CEMP Appendix 4-5) from the Site and daily staff movements will also give rise to some localised dust emissions during periods of dry weather. This is a short-term slight negative effect, which is not significant. Mitigation measures are presented below.

Transport

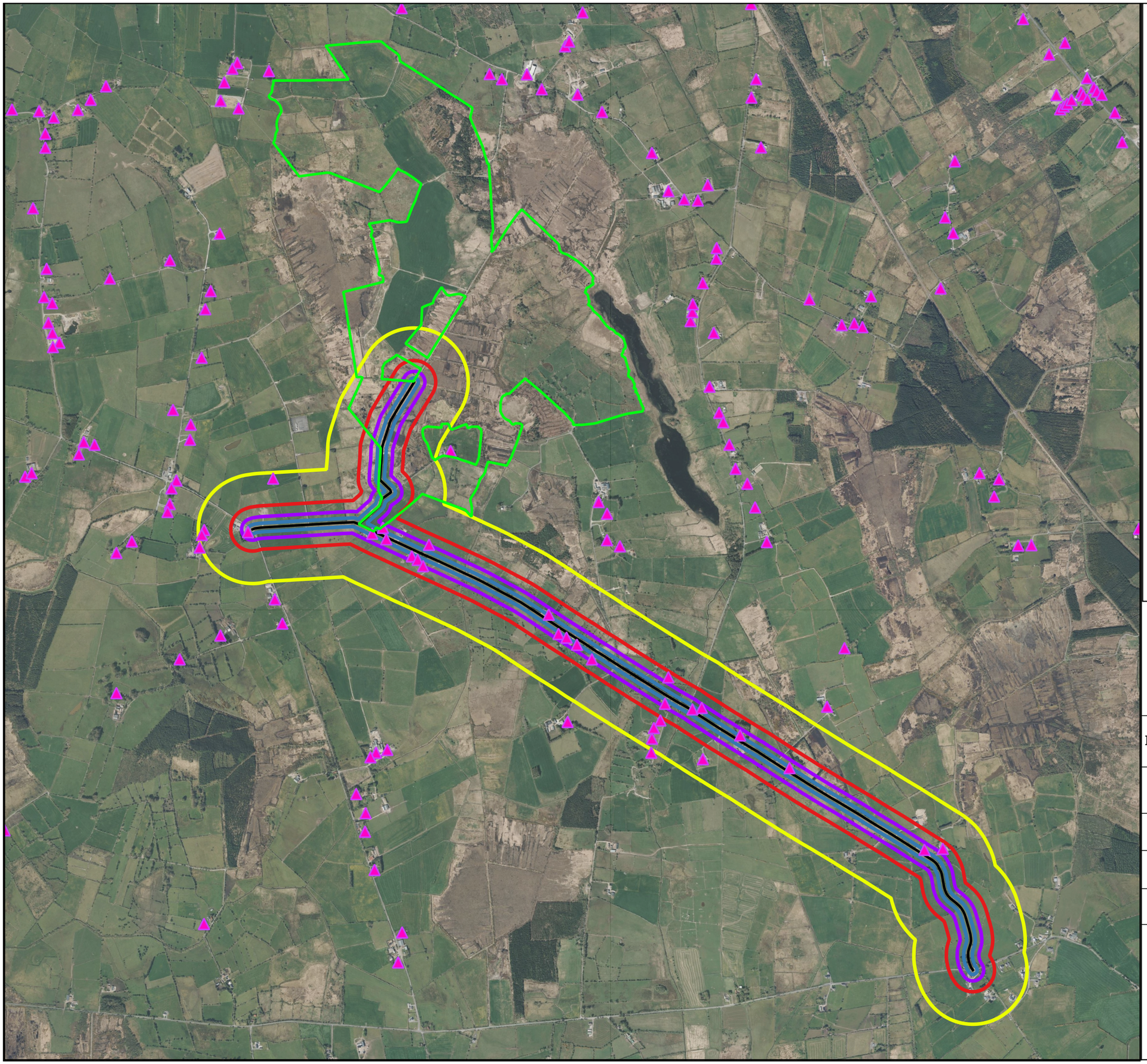
The IAQM 2024 Guidance states that the routes of construction traffic should also be included in an assessment of dust arising from trackout, and that related construction dust impact increases with respect to the number of movements of HGVs per day, length of unpaved road, distance to receptors and the sensitivity of local receptors.

For the purposes of assessment of the dust emissions arising from trackout related to the construction of the Proposed Project, a 4km section of the L1505 local road and 780m section of the L15053 was scoped in for assessment. Beyond either end of the L1505 section of road, construction traffic will

disperse in different directions along different routes to a degree that there will be no potential for significant effects from trackout related dust emissions. The section of the L1505, scoped in for assessment, is approximately a 4km stretch of local road that runs in a south-east orientation to the south of the Site, while the L15053 road section leads from the L1505 directly to the Site.

The IAQM 2024 Guidance as discussed in Section 10.1.6.3 above is used to assess the potential risk to high sensitivity receptors from dust deposition. Dust deposition impacts can occur for a distance of 250m from source (the 4km stretch of the L1505 and 780m stretch of the L15053), but the majority of deposition occurs within the first 50m (IAQM, 2024). The high sensitivity receptors i.e. residential properties were identified using a constraints mapping process, and detailed and updated planning searches which informed the project sensitive receptor dataset. The sensitive receptors located within the appropriate distance from potential dust emission sources, provided by the IAQM 2024 Guidance, are detailed below and presented in Figure 10-3 below.

- There are 4 no. high sensitivity residential properties located within 20m of the identified 4km stretch of the L1505 and 780m stretch of the L15053;
- There are 18 no. high sensitivity residential properties within 50m of the identified 4km stretch of the L1505 and 780m stretch of the L15053;
- There are 21 no. high sensitivity residential properties within 100m of the identified 4km stretch of the L1505 and 780m stretch of the L15053;
- There are 28 no. high sensitivity residential properties within 250m of identified 4km stretch of the L1505 and 780m stretch of the L15053.



Map Legend

- EIAR Site Boundary
- High Sensitivity Receptors
- Proposed Project Infrastructure
- L15053 and L1505 Local Roads
- 20m IAQM Dust Deposition Band
- 50m IAQM Dust Deposition Band
- 100m IAQM Dust Deposition Band
- 250m IAQM Dust Deposition Band

Drawing Title
IAQM Dust Deposition Bands and Relevant High Sensitivity for the L15053 and L1505

Project Title
Proposed Cunlaghfadda Green Energy Project

Drawn By	Checked By
NS	ÓM
Project No. 220825	Drawing No. Figure 10-3
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Sensitivities of People to Dust Soiling Effects

Table 10-21 below identifies the sensitivity of the area surrounding the L1505 and L15053 to dust soiling effects from trackout, as described in Section 10.1.6.3.

As per the criteria in Table 10-21 below, there are 4 no. high sensitivity receptors within 20m of the L1505 and L15053, and 18 no. high sensitivity receptors within 50m of the L1505 and L15053. The overall sensitivity of the area to dust soiling effects is considered to be 'Medium'. In relation to dust emissions associated with transport to and from the Site, the potential effect from dust emissions on people and property is considered to be a short term, slight, negative effect, and is Not Significant.

Table 10-21 Sensitivity of the Area to Dust Soiling Effects on People and Property. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Number Of Receptors	Distance from source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Sensitivities of People to the Health Effects of PM10

Table 10-22 below identifies the high sensitivity receptors in the area surrounding the L1505 and L15053 to the health effects of PM_{10}, as described in Section 10.1.6.3 above. The overall sensitivity of the area to human health effects of PM_{10} is considered to be **'Low'**. As indicated in Section 10.1.6.1 above, the Site is situated in Zone D. According to the 2024 EPA baseline air quality data, the average PM_{10} for Zone D is 11.5µg/m^3. Therefore, the only annual PM_{10} concentration categorised in the IAQM 2024 Guidance relevant to the Proposed Project is the minimum concentration of <24µg/m^3. In relation to dust emissions associated with transport to and from the Site, the potential effect from dust emissions on human health is considered to be a short term, slight, negative effect, and is Not Significant.

Table 10-22 Sensitivity of the Area to Human Health Impacts from the transportation of construction plant and vehicles on the identified 4km stretch of the L1505 local road and L15053 road. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number Of Receptors	Distance from source (m)			
			<20	<50	<100	<250
High	<24 µg/m^3 (<14 µg/m^3 in Scotland)	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	<24 µg/m^3 (<14 µg/m^3 in Scotland)	>10	Low	Low	Low	Low
		1-10				

Low	-	≥1	Low	Low	Low	Low

Sensitivities of Receptors to Ecological Effects

The high sensitivity receptors relating to dust sensitive ecological habitats were identified in the area surrounding the L1505 and L15053. These include:

- There are 2 no. high sensitivity dust sensitive ecological habitats located within 20m of the identified 4km stretch of the L1505 and 780m stretch of the L15053;
- There are 2 no. high sensitivity dust sensitive ecological habitats within 50m of the identified 4km stretch of the L1505 and 780m stretch of the L15053;

Table 10-23 below identifies the sensitivity of the receptors to ecological effects in the area surrounding the L15053 and L1505. As noted above, there are 2 no. sensitive ecological receptors (habitats) within 20m and 50m of the Proposed Project footprint, these being cutover bog and Cutover bog with small remnants of uncut raised bog present within the Site. The overall sensitivity of these areas is 'High'. Taking the below into account, the sensitivity of these areas based on the number of high sensitivity receptors and the distance from the L1505 and L15053, the overall receptor sensitivity is considered to be High. For the construction phase of the Proposed Project, the potential effect from dust emissions due to transport to and from the Site on sensitive ecological receptors is considered to be a short term, significant, negative effect, and is Significant. Please note, a detailed ecological impact assessment assessing impacts on these ecological receptors during the construction phase (including effects from dust) is contained in Chapter 6 of this EIAR and the NIS.

Table 10-23 Sensitivity of the Area to Ecological Impacts. Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024)

Receptor Sensitivity	Distance from source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

As identified in Section 10.1.6.3, the Proposed Project is classified as 'Large' for Trackout activities. Therefore, when combined with the sensitivity of the area, using Table 10-22 above as guidance, the pre-mitigation risk of impacts from the Proposed Project on the identified 4km stretch of the L1505 and 780m section of the L15053 is summarised in Table 10-24 below.

Table 10-24 Summary Dust Risk Table for the L15053 and L1505

Potential Impact	Trackout (Proposed Project)
Dust Soiling	Medium Risk
Human Health	Low Risk
Ecological	High Risk

In relation to sensitivities of people to dust soiling and health effects of PM10, with no mitigation applied, the overall risk of dust emissions impacts on the identified 4km stretch of the L1505 and 780m stretch of the L15053 during the construction phase of the Proposed Project is 'Medium'. Therefore, this is considered to be equivalent to a short-term, slight, negative effect, and is Not Significant.

In relation to ecological receptors, the overall risk of dust emissions impacts due to transport to and from the Site, with no mitigation applied associate is 'High'. Therefore, the potential effects are considered to be equivalent to short-term, significant, negative effects and are Significant.

Mitigation and Monitoring Measures

- Sporadic wetting of loose stone surface will be carried out during the construction phase to minimise movement of dust particles to the air. In periods of extended dry weather, dust suppression may be necessary along haul roads to ensure dust does not cause a nuisance. Water bowser movements will be carefully monitored by the ECoW to avoid, insofar as reasonably possible, increased runoff.
- All plant and materials vehicles shall be stored in dedicated areas within the Site.
- Turbines components and construction materials will be transported to the Site on specified haul routes only, as agreed with the local authority.
- Construction materials for the Proposed Project will be sourced locally from licenced quarries, and will be covered by tarpaulin where necessary.
- The local roads on approach to, and within the Site will be regularly inspected for cleanliness and cleaned as necessary.
- Waste material that would contribute to dust emissions if retained on Site will be transferred to a licensed /permitted Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be sorted into individual waste streams for recycling, recovery or disposal.
- Dust arising from the construction phase will be minimised by the above measures which will be implemented in full, and are incorporated into a site specific CEMP (see Appendix 4-5).

Residual Effect

Following implementation of mitigation measures as outlined above, residual effects on air quality from dust emissions from traffic movements to and from the Site during the construction phase will have a short-term, slight, negative effect.

Significance of Effects

The effects on air quality from dust emissions arising from transportation activities during the construction phase of the Proposed Project are considered to be Not Significant.

10.3.3 Operational Phase

10.3.3.1 Exhaust Emissions: Proposed Project Infrastructure

Pre-Mitigation Impact

The operational phase of the Proposed Project will generate additional traffic in the area in the form of light goods vehicles (LGVs) visiting the Site 1-2 times per day for inspections. On occasion, daily visits by LGVs and HGVs may be required over short periods during maintenance/component replacement activities. The addition of a LGV to the area 1-2 times per day during the operational phase will give

rise to a long-term, imperceptible, negative effect on air quality due to exhaust emissions, and is Not Significant.

The addition of several HGVs on occasion over the 35-year lifetime of the Proposed Project will give rise to a long-term, imperceptible, negative effect on air quality due to the localised and intermittent nature of the maintenance and is Not Significant.

In addition to the above, the Site will continue to be used as a working farm and therefore farm machinery will continue to utilise the Site as required.

The permanent onsite 110kV substation will be operated and maintained by Eirgrid. It is anticipated that substation operators will visit the Site 1-2 times per day in LGVs but on occasion, HGVs may be required to visit the Site for maintenance/substation component replacement. On occasion, the removal of hydrocarbons (transformer oil) and waste from substation welfare facilities will be removed from the Site by a licenced waste disposal company. The addition of a LGV to the area 1-2 times per day during the operational phase will give rise to a long-term, imperceptible, negative effect on air quality due to exhaust emissions, and is Not Significant. The addition of several HGVs on occasion over the 35-year lifetime of the Proposed Project will give rise to a long-term, imperceptible, negative, effect on air quality and is Not Significant.

Mitigation and Monitoring Measures

- Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any emissions that arise.
- When stationary, delivery and onsite vehicles will be required to turn off engines.

Residual Effect

Based on the above, the effect on air quality from exhaust emissions during the operational phase is a long-term, imperceptible, negative effect.

Significance of Effects

The effects on air quality from exhaust emissions arising during the operational phase of the Proposed Project are considered to be Not Significant.

10.3.3.2 Dust Emissions: Proposed Project Infrastructure

Pre-Mitigation Impact

As discussed above in Section 10.3.3.1, the operational phase of the Proposed Project will generate additional traffic to the area in the form of LGVs 1-2 visits per day and on occasion, daily LGVs and HGVs for short periods if maintenance or component replacement is required. This additional traffic may give rise to dust emissions. This will be a long-term, imperceptible, negative effect on air quality, and is Not Significant.

The permanent onsite 110kV substation will be operated and maintained by ESB/ Eirgrid. It is anticipated that substation operators will visit the Site 1-2 times per day in LGVs but on occasion, HGVs may be required to visit the Site for maintenance/substation component replacement. On occasion, the removal of hydrocarbons (transformer oil) and waste from substation welfare facilities will be removed from the Site by a licenced waste disposal company. This additional traffic may give rise to dust emissions. This will be a long-term, imperceptible, negative effect on air quality and is Not Significant.

Mitigation and Monitoring Measures

- Any vehicles or plant brought onsite during the operational phase will be maintained in good operational order that comply with the Road Traffic Acts 1961 as amended, thereby minimising any dust emissions that arise.

Residual Effect

Based on the above, the residual effect on air quality from dust emissions during the operational phase is a long-term, imperceptible, negative effect.

Significance of Effects

The effects on air quality from dust emissions arising during the operational phase of the Proposed Project are considered to be Not Significant.

10.3.3.3 Overall Effect on Air Quality

10.3.3.3.1 *Operational Phase: Air Quality*

Although a long-term imperceptible negative effect on air quality is expected during the operational phase due to exhaust and dust emissions from maintenance vehicles, there will be no net carbon dioxide (CO_2) emissions from the operation of the Proposed Project. By providing an alternative to electricity derived from coal, oil or gas-fired power stations, the Proposed Project will result in emission savings of carbon dioxide (CO_2), oxides of nitrogen (NO_x), and sulphur dioxide (SO_2). The production of renewable energy from the Proposed Project will have a long-term, moderate, positive, effect on air quality and is Not Significant due to the offsetting of approximately 19,731 tonnes of Carbon Dioxide (CO_2) per annum. Please see Section 11.4.3.2 of Chapter 11 Climate for further details on carbon displacement calculations.

Mitigation and Monitoring Measures

No mitigation required.

Residual Effect

The overall effect will be a long-term moderate positive effect on air quality due to the displacing 19,731 tonnes of carbon dioxide per annum (690,588 tonnes over the 35-year operational life) (see Chapter 11 for details), due to the provision of renewable energy to approximately 19,542 Irish households with electricity per year.

Significance of Effects

The effects on overall improved air quality during the operational phase of the Proposed Project are considered to be Not Significant.

10.3.3.3.2 *Operational Phase: Human Health*

Whilst the operational phase of the Proposed Project will give rise to minor increases in dust and vehicle emissions, the implementation of the mitigation measures discussed above, and good management practices can prevent or minimise potential effects off-site. Good management practice consists of good site design and layout, adopting appropriate working methods, choosing the right equipment and ensuring that the workforce understands the company's responsibilities and is familiar

with good working practice and dust suppression techniques. The potential for health effects are considered negligible as the potential for both exhaust and dust emissions will be limited and controlled through site layout design and mitigation measures outlined in Sections 10.3.2.1 to 10.3.2.4.

Exposure to chemicals such as SO_2, NO_x, Pb, benzene and O_3 are known to be harmful to human health. The production of clean renewable energy from the Proposed Project will offset the emission of these harmful chemicals by fossil fuel-powered sources of electricity and, therefore, will have a long-term, moderate, positive effect on human health and is Not Significant.

Further information on the impact of the Proposed Project on Human Health is contained in Chapter 5: Population and Human Health.

Mitigation and Monitoring Measures

No mitigation required.

Residual Effect

Based on the above, the residual effect on human health during the operational phase is a long-term moderate, positive effect.

Significance of Effects

The effects on human health arising from improved air quality during the operational phase of the Proposed Project are considered to be Not Significant.

10.3.4 Decommissioning Phase

The Proposed Wind Farm is seeking permission for an operational life of 35 years. Wind turbines are expected to have a lifespan of approximately 35 years. Following the end of their useful life, the wind turbines may be replaced with a new set of turbines, subject to planning permission being obtained, or the Proposed Wind Farm may be decommissioned fully. The proposed onsite 110kV substation and Proposed Grid Connection will remain in place as it will be under the ownership of ESB/ Eirgrid.

A Decommissioning Plan is included in Appendix 4-6 of this EIAR for the decommissioning of the Proposed Project, further detail of which will be agreed with the local authority prior to any decommissioning. Any impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less impact. The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential effects. The potential for effects during the decommissioning phase of the Proposed Project has been fully assessed in this EIAR.

10.3.5 Cumulative Effects

The assessment for potential cumulative effects between the Proposed Project, and other relevant developments has been carried out with the purpose of identifying what influence the Proposed Project will have on the surrounding environment when considered cumulatively and in combination with relevant existing permitted or proposed projects and plans in the vicinity of the Site, such as other wind energy developments, extractive industries, battery energy storage systems, forestry etc. Please see Section 2.9 of Chapter 2: Background to the Proposed Project for the cumulative assessment methodology used.

During the construction phase of the Proposed Project and the construction of other permitted or proposed projects and plans in the area (please see Section 2.9 in Chapter 2 and Appendix 2-3 of this

EIAR), there will be exhaust emissions from construction plant and machinery and potential dust emissions associated with the construction activities. However, once the mitigation proposals, as outlined in the above assessment are implemented during the construction phase of the Proposed Project, there will be no cumulative negative effect on air quality.

Exhaust and dust emissions during the operational phase of the Proposed Project will be minimal, relating to the use of maintenance machinery and vehicles onsite, and therefore there will be no measurable negative cumulative effect with other developments on air quality.

The nature of the Proposed Project is such that, once operational, it will have a long-term, moderate, positive impact on the air quality. There will be no measurable negative cumulative effect with other developments on air quality.

10.3.5.1 Construction Phase

Air Quality

During the construction phase of the Proposed Project, and other permitted or proposed projects and plans in the area, there will be minor exhaust emissions from construction plant and machinery and potential dust emissions associated with the construction activities. However, once the mitigation proposals, as outlined in Sections 10.3.2.1 to 10.3.2.4 are implemented during the construction phase of the Proposed Project, there will be no cumulative negative effect on air quality.

As established in Section 10.3.2, there are short-term, imperceptible to slight, negative effects on air quality during the construction phase from:

- Exhaust emissions arising from the construction of Proposed Project infrastructure;
- Exhaust emissions arising from transit of vehicles to, from and within the Site;
- Dust Emissions arising from the construction of Proposed Project infrastructure; and,
- Dust emissions arising from the transit of vehicles to, from and within the Site.

Therefore, it is considered there will be no cumulative effects on air quality, should other proposed or consented plans and projects within the surrounding landscape be constructed in parallel with the Proposed Project.

10.3.5.2 Operational Phase

Air Quality

Exhaust emissions of carbon dioxide (CO_2), oxides of nitrogen (NO_x), sulphur dioxide (SO_2) or dust emissions during the operational phase of the Proposed Project will be minimal, relating to the use of operation and maintenance vehicles onsite, and therefore there will be no measurable negative cumulative effect with other developments on air quality.

As established above in Section 10.3.3, there will be a long-term imperceptible negative effect on air quality due to:

- Exhaust and dust emissions from maintenance LGV vehicles visiting the approximately once daily for site inspections; and,
- Increased exhaust and dust emissions on occasion due to more frequent LGV and HGV visits during component or substation infrastructure replacement.

It is similarly established in Section 10.3.3 that there will be an overall long-term moderate positive effect on air quality given:

- There will be no net carbon dioxide (CO_2) emissions from operation of the Proposed Project. By providing an alternative to electricity derived from coal, oil or gas-fired power stations, the Proposed Project will result in emission savings of carbon dioxide (CO_2), oxides of nitrogen (NO_x), and sulphur dioxide (SO_2).
- The production of renewable energy from the Proposed Project will have a long-term moderate positive effect on air quality due to the offsetting of approximately 19,731 tonnes of Carbon Dioxide (CO_2) per annum, or 690,588 tonnes of carbon dioxide over the proposed 35-year lifecycle of the Proposed Project.

It is therefore considered there will be no measurable negative cumulative effects on air quality should other proposed or consented plans within the surrounding landscape be operational in parallel with the Proposed Project. However, once the Proposed Project is operational, there will be a long-term, moderate, positive impact on the air quality.

10.3.5.3 Decommissioning Phase

The works required during the decommissioning phase are described in Section 4.11 in Chapter 4: Description of the Proposed Project. Any cumulative impact and consequential effect that occurs during the decommissioning phase are similar to that which occur during the construction phase, be it of less impact. The mitigation measures prescribed for the construction phase of the Proposed Project will be implemented during the decommissioning phase thereby minimising any potential cumulative effects.

10.4 EIA Classification Summary

Please see the below Table 10-25 for a summary of all identified impacts for the Proposed Project relating to air quality.

Table 10-25 Impact Assessment Classification Summary

Topic	Pre-Mitigation Effect	Mitigation Section Reference	Residual Effect	Significance
Construction Phase				
Exhaust Emissions- Construction of the Proposed Project Infrastructure	Short-Term, Slight, Negative	Section 10.3.2.1	Short-Term, Imperceptible, Negative	Not Significant
Exhaust Emissions- Transportation to and from the Site	Short-Term, Slight, Negative	Section 10.3.2.2	Short-Term, Imperceptible, Negative	Not Significant
Dust Emissions: Construction of Proposed Project Infrastructure	**Dust Soiling and Human Health:** Short-Term, Moderate, Negative **Ecological:** Short-Term, Significant, Negative	Section 10.3.2.3	**Dust Soiling, Human Health and Ecological:** Short-Term, Slight, Negative	Not Significant
Dust Emissions: Transport to and from the Site	**Dust Soiling and Human Health:** Short-Term, slight, Negative **Ecological:** Short-Term, Significant, Negative	Section 10.3.2.4	**Dust Soiling, Human Health and Ecological:** Short-Term, slight, Negative	Not Significant
Operational Phase				
Exhaust Emissions	Long-Term, Imperceptible, Negative	Section 10.3.3.1	Long-Term, Imperceptible, Negative	Not Significant

Dust Emissions	Long-Term, Imperceptible, Negative	Section 10.3.3.2	Long-Term, Imperceptible, Negative	Not Significant
Air Quality	Long-term, Moderate, Positive	N/A	Long-term, Moderate, Positive	Not Significant
Human Health	Long-term, Moderate, Positive	N/A	Long-term, Moderate, Positive	Not Significant
Decommissioning Phase				
Air Quality	Any impact and consequential effect that occurs during the decommissioning phase will be similar to that which occurs during the construction phase, however to a lesser extent and lesser duration.	10.3.2	N/A	N/A